

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 1, 2011

Precipitation and Snowpack

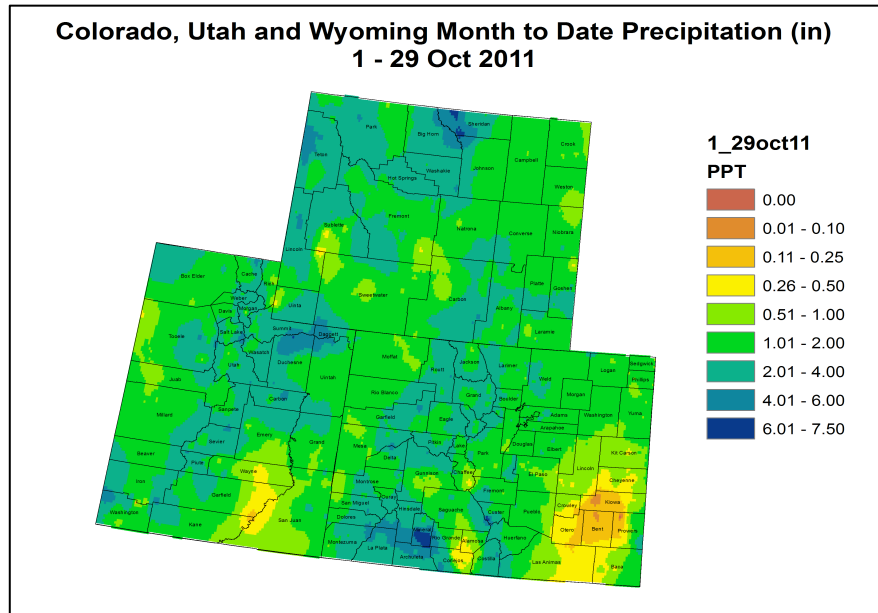


Fig. 1: October month-to-date precipitation in inches.

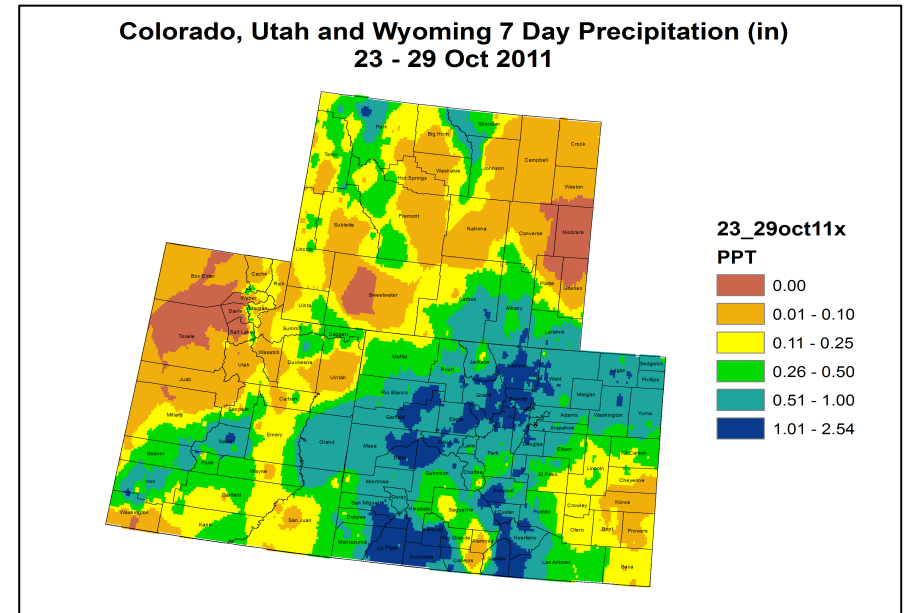


Fig. 2: October 23 – 29 precipitation in inches.

In October, precipitation has favored the higher elevations of the Upper Colorado River Basin (UCRB, Fig. 1). The northern and central mountains of Colorado, the Wasatch mountains in Utah, and the San Juans in southern CO have all received between 1 and 4 inches of moisture for the month, with some isolated spots in the San Juans and northeast UT receiving over 4 inches. East of the basin, the Sangre de Cristos have also seen accumulations of around 2 inches and northeast CO has also received over an inch for the month. Southeast CO and the Colorado River valley in southeast UT have been somewhat drier, receiving less than half an inch in many spots.

Last week, most of the precipitation was concentrated in the Colorado mountains (Fig 2). The northern mountains, the San Juans, and the Sangre de Cristos all saw over an inch accumulation of precipitation for the week. Northeast CO received over half an inch of moisture while southeast CO saw less than a quarter inch. Much of the western part of the UCRB was also relatively drier for the week.

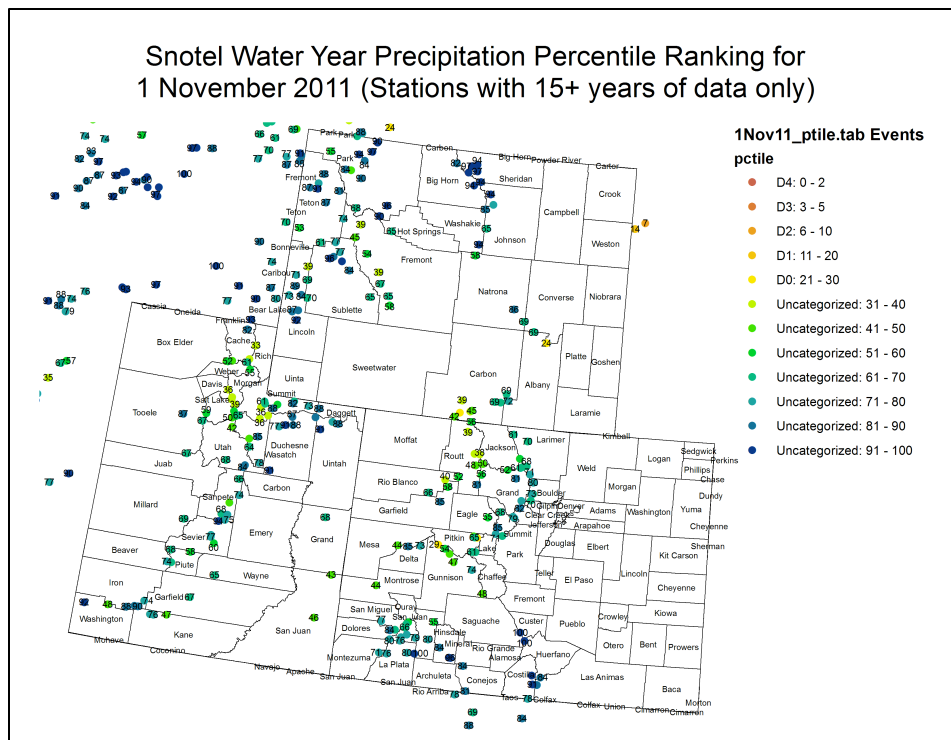


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor’s D0 category).

Water-year-to-date (WYTD), SNOTEL precipitation percentiles are in the near normal range throughout most of the UCRB (Fig. 3) and are indicating a good start to the winter snowfall season. Percentiles in the Upper and Lower Green River basins are generally above 70%. Some slightly lower percentiles are being seen in the northern and central CO mountains, but are still mostly above the 40th percentile. The mountains in southern CO are doing well with WYTD precipitation accumulations near or above the 70th percentile.

In the San Juan basin (around the Four Corners), snowpack is near average for the beginning of the season (Fig. 4). After a large event earlier in the month, much of the snowpack melted, but was quickly replenished by another system, keeping snowpack near average, and slightly above last year’s early accumulations.

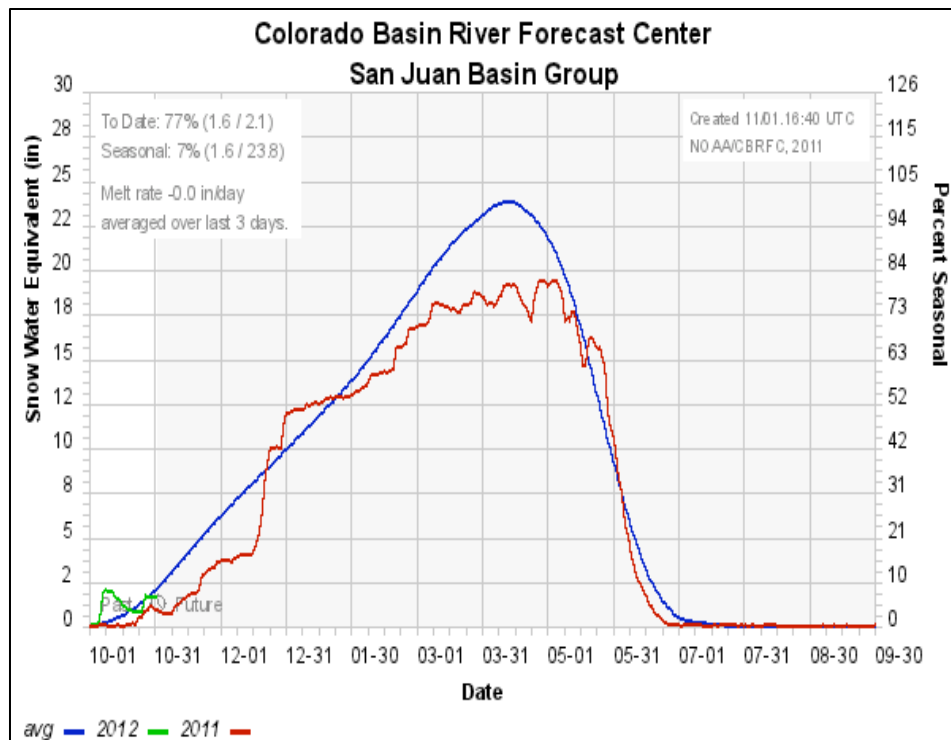
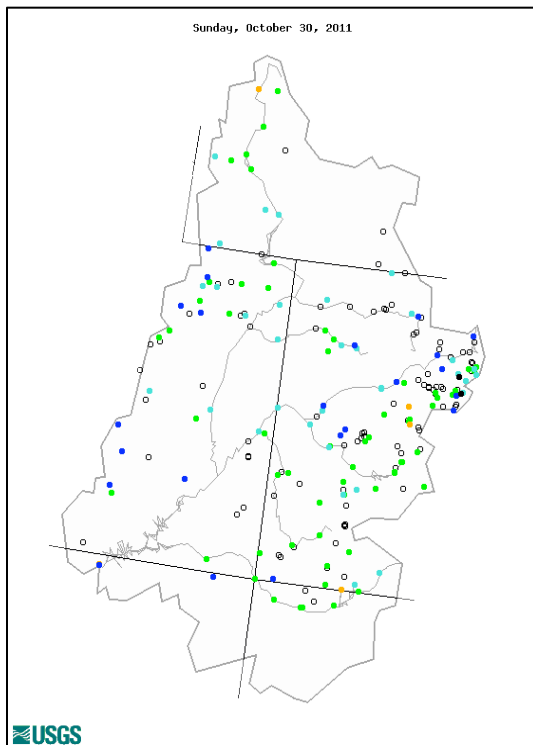


Fig. 4: San Juan basin WYTD snow water equivalent accumulation (green line) compared to average (blue) and last year (red).

Streamflow

As of October 30th, 97% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5), with 4 gages recording below normal flows. About 20% of the gages in the basin are recording much above normal flows, with many of the gages showing increased flows since last week. This quick response is likely due to the heavy, wet snowfall that occurred last week, combined with temperatures still peaking above the freezing level.

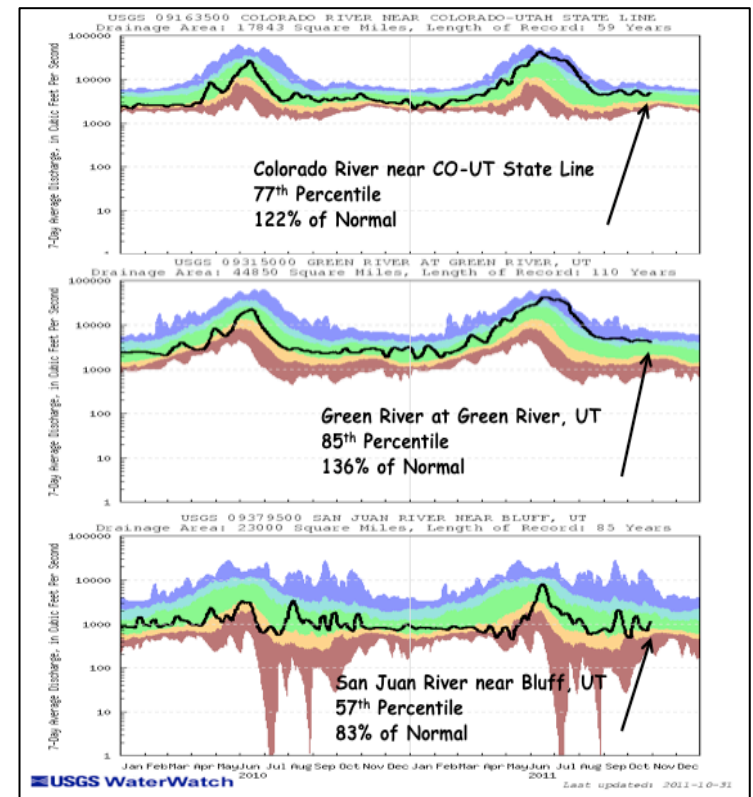
Key gages on the Colorado River near the CO-UT state line and the Green River at Green River, UT are currently recording above normal flows at the 77th and 85th percentiles, respectively (Fig. 6). The San Juan River gage near Bluff, UT is reporting near normal flows at the 57th percentile.



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 5: 7-day average discharge compared to historical discharge for October 30th.

Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



Water Supply and Demand

Last week, cooler than average temperatures dominated over most of the UCRB and eastern CO. With the cooler fall conditions and continuous widespread precipitation throughout the drought stricken areas of southeast CO, water demands have eased. The VIC model shows poor soil moisture conditions where long term dryness has prevailed for much of the year over southeast CO (Fig. 7). Most of the UCRB shows near average soil moisture with the Wasatch range in UT and the mountains near the Colorado Headwaters showing wet soils. Parts of eastern UT and Sweetwater County, WY continue to show drying soils.

All of the major reservoirs above Lake Powell in the UCRB ended the month near or above their average October volumes. Flaming Gorge and Lake Granby are well above their averages, at 111% and 112% respectively. Lake Powell ended the month at 89% of average and 71% of capacity, compared to 63% of capacity last year.

Precipitation Forecast

After a brief period of dry weather, unsettled conditions are expected to return to the UCRB by this afternoon (Fig. 8). A strong cold front will dig south across the area through today bringing snow and below average temperatures. Due to the quick movement of this system expect liquid accumulation amounts to remain under 0.75 inches, with the mountains of northern CO and southern WY in line for the best precipitation chances. Dry conditions will make a brief return on Thursday before the next Pacific trough begins to affect the region on Friday. This system appears to be more vigorous than the mid-week storm, and should bring a chance of accumulating snow to the entire basin through Friday evening. Total liquid accumulation from this event should range from 0.25 inches in valley locations to 1.00 inch along higher ridges, with slight differences possible depending on the exact path of the storm. By Sunday this trough should be east of the area as yet another storm makes landfall on the west coast. Early next week appears to remain unsettled with long range forecast models suggesting the persistence of a progressive pattern.

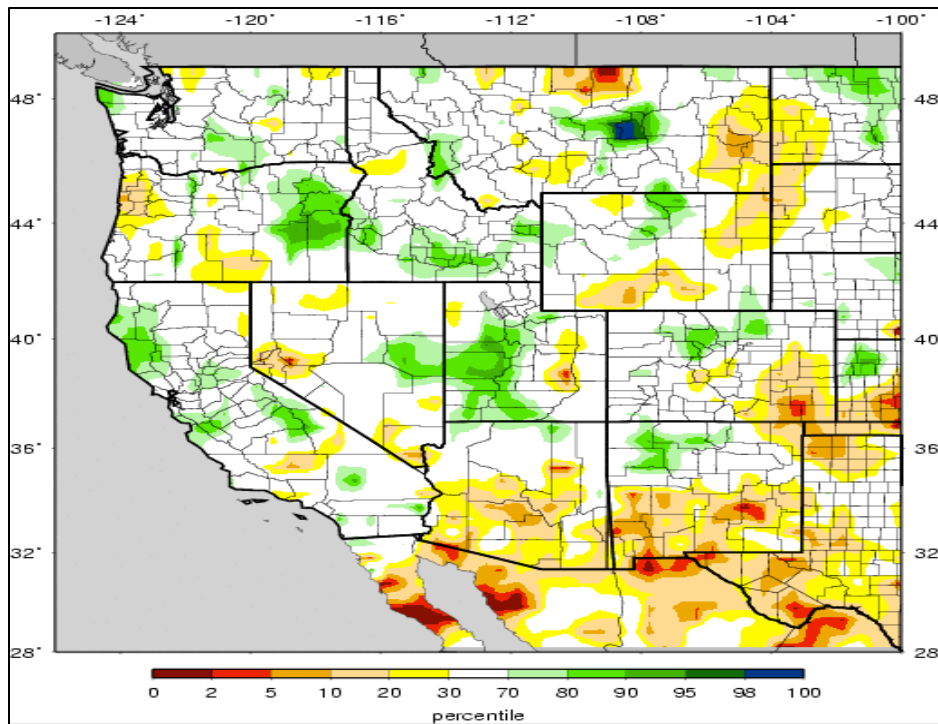


Fig. 7: VIC soil moisture percentiles as of October 30th.

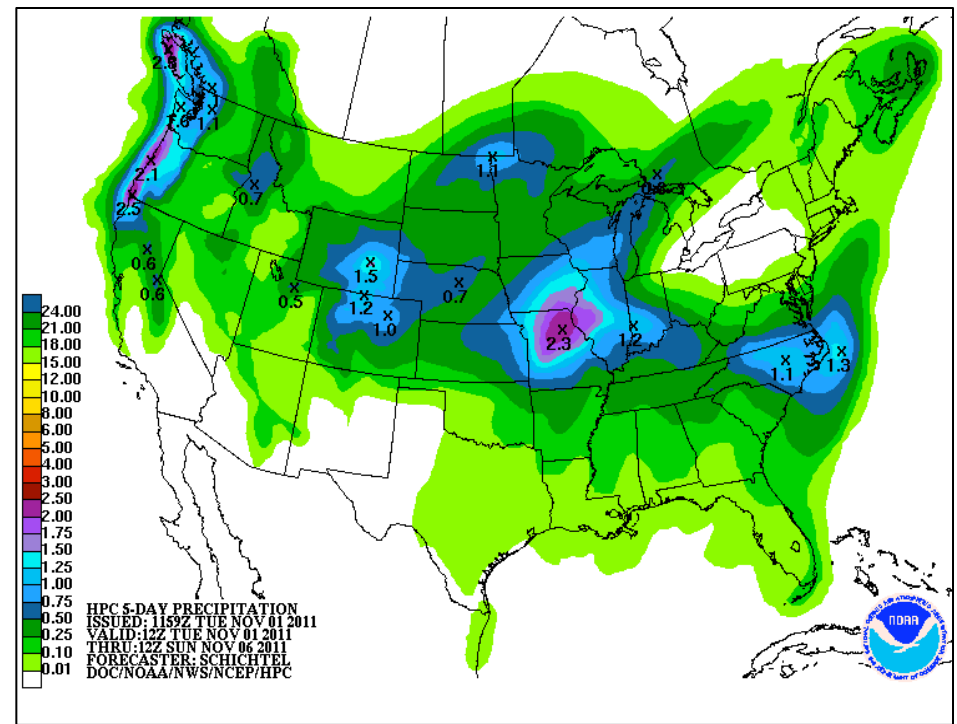


Fig. 8: Hydrologic Prediction Center's 5-day quantitative precipitation forecast effective 12Z November 1st.

Drought and Water Discussion

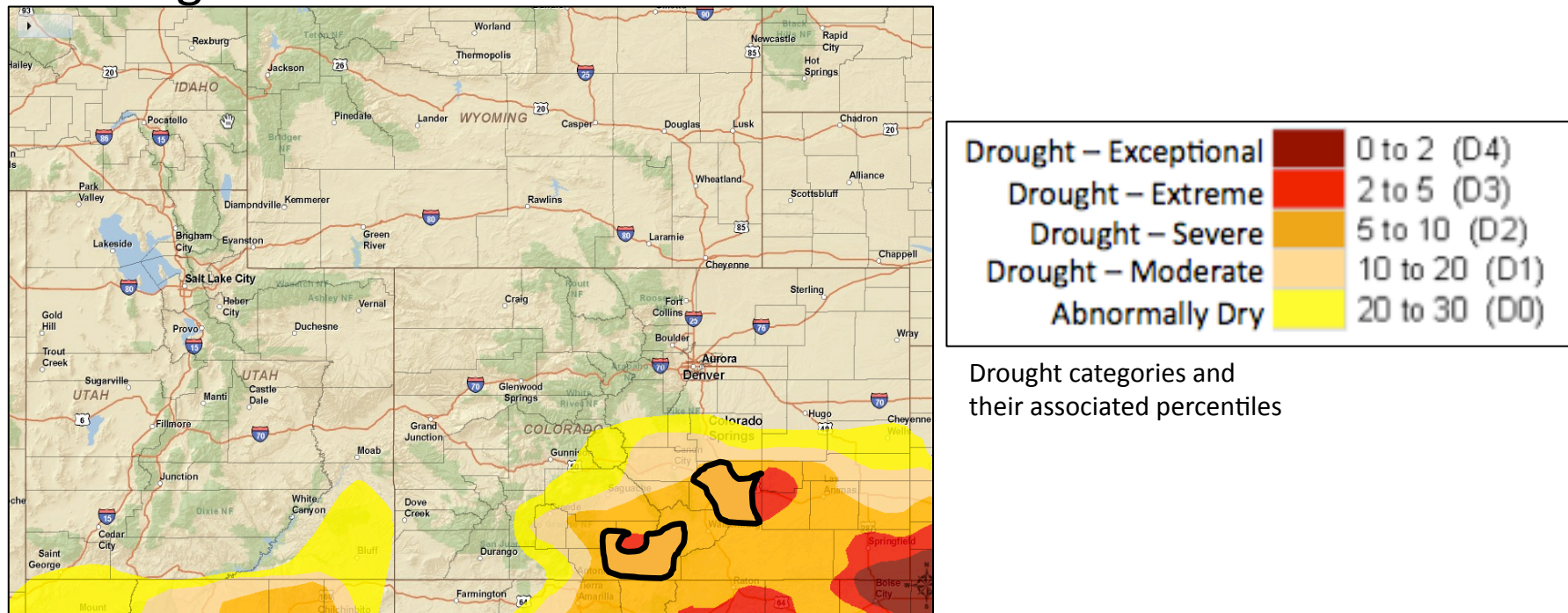


Fig. 9: October 25th release of U.S. Drought Monitor for the UCRB

Drought categories and their associated percentiles

Status quo is recommended for the UCRB in the most current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). Continued dryness in southeast UT (with precipitation deficits, lower streamflows, and drier soils) still warrants the D0 that is currently drawn there. Status quo is also recommended for northeast CO. Though short-term dryness has been showing up around Washington and Yuma counties, the recent cooler temperatures and precipitation have helped improve ground conditions there.

In southeast CO, snow accumulations in the Sangre de Cristos and surrounding areas warrant some improvements. Standardized precipitation indices (SPIs) show improvements in the San Luis Valley and in Pueblo County which are supported by streamflows, soil moisture depictions. It is recommended that D3 be scaled back (remove D3 enclosed in black lines, Fig. 9). At this time, the D2 in the southeast region is still justified and should remain.